# SUN CONTROLS

CONSTRUCTION SPECIALTIES, INC.

The contemporary use of sun control devices as an integral part of today's architecture stems from both sound economics and important architectural design consideration.

C-S Sun Controls offer significant efficiency in the control of solar heat and sun glare. Their use affords economies in the initial and operating costs of air conditioning equipment, lowers the ventilating requirements where air conditioning equipment may not be used, and eliminates the discomforts of heat and blinding sun glare from direct sun rays.

At the same time, our broadly diversified line and the adaptability of C-S Sun Controls offer the architect unusual design opportunities.

Wherever solar shading is proposed, sun controls by Construction Specialties merit special consideration.

**product development** Construction Specialties is a leader in the design and manufacture of aluminum sun controls because of its integrated product development program. C-S engineering and research is a continuous process which developed the C-S Cantilever Sunshade, the awning type extruded aluminum Sun Curtain; the C-S extruded aluminum Demi-Fin and a full line of C-S electric and hydraulic operating controls.

A full line of Vertical and Horizontal Solar Shades using our newly developed seamless Airfoil shape is introduced in this catalog.

**economy** As a result of our specialization and experience in solar shading, we have been able to lower solar shading costs substantially, at the same time offering an engineered, high quality product. The labor savings inherent in our use of extruded assemblies, and our integrated mass-production facilities are the key to this important feature. Extensive field experience in erecting all of our sun shades has been a major influence in the design and fabrication of C-S Sun Controls to provide easy economical erection.

**finish** C-S Sun Shades are available in a wide variety of superior finishes as detailed on page 18. These include etch and lacquer, anodized coatings, epoxy color finishes, and porcelain enamel on aluminum. We suggest the architect specify a minimum etch and lacquer finish on all C-S Sun Controls.

**production facilities** Our Sun Controls are thoroughly engineered, thoroughly job-tested products, manufactured and finished to high quality standards. Two complete modern plants are located in Cranford, New Jersey and Escondido, California to provide efficient, economical service to both East and West coasts. Our production and finishing facilities represent the finest of their type in the country today.

**engineering service** Our engineering staff is expertly equipped to be of service at any time when problems of design or use of solar shades are encountered. In addition to the C-S Sun Controls shown in this catalog, we are ready to assist in the design of highly individualized sun shades.

**The most important ingredient in C-S Sun Controls is our years of successful experience in the design and fabrication of hundreds of C-S Sun Control installations for buildings by major architects. It is our experience that assures you of good appearance, safety, economy, and quality wherever C-S Sun Controls are specified.**

FIXED ▶

OPERATING ▶

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## standard cantilever type • anchorage

Our Cantilever Sun Shades offer solar shading in a sweeping horizontal line, without obstruction to view; structural soundness coupled with neat, trim line afforded by extruded aluminum construction, and substantial economies in sun shade cost, erection, and maintenance.

**appearance** Shading is accomplished in an uninterrupted sweep, with all fascia and blades mechanically secured in true alignment. The wall anchorage is neat; there are no exposed bolts or other fastenings. The fascia may be selected from seven C-S styles to harmonize with other elements in the building's design. The important appearance factor of line-up is facilitated by the exclusive C-S spline. This acts both to line up and provide for expansion and contraction between individual shade sections. Positive provision for line-up and expansion is also made in the structural fascia members.

**solar shading efficiency** Sun and sky glare are controlled by the sunshade overhang, which may extend 72 inches from the exterior building wall. Each installation should be individually job-engineered with the following factors taken into consideration: orientation of the building to the sun, geographical location of the building, height of windows to be shaded, hours of solar shading desired, and the structural condition at the head of all windows. Our experienced engineering staff is prepared to study your requirements and submit recommendations, details, and cost data. All inquiries should clearly report on all job-engineering factors noted above.

**structural soundness** The use of our extruded 6061 T6 aluminum alloy, reinforced outrigger, secured to the building in our high strength, heat treated castings, provides an unusually strong structural member capable of supporting the cantilever load with a high safety factor. All outriggers and castings are certified for a minimum live load of 30 pounds per square foot of sun shade. Each outrigger will support a 200 pound man, with a 100% safety factor.

**economy** As a result of our specialization and experience in solar shading, we have been able to lower solar shading costs substantially, at the same time offering an engineered, quality product.

**low initial cost** C-S Sun Shades are manufactured from our own standard, mass-produced extrusions, which have been designed for simplified, economical shop fabrication. Additional economies are realized through our use of specialized production equipment.

**low erection cost** Our Sun shades are delivered to the job in assembled sections, ready for erection. Our castings permit erection directly to structural members—yet the walls go up without the interference of outriggers. Our escutcheon castings provide ample adjustment to meet job conditions. Fascias and shade sections have integral line-up features. The use of steel outriggers and the problems of co-ordinating line-up and positioning are eliminated. A thoroughly professional job is accomplished with ease and a minimum of on-the-job labor.

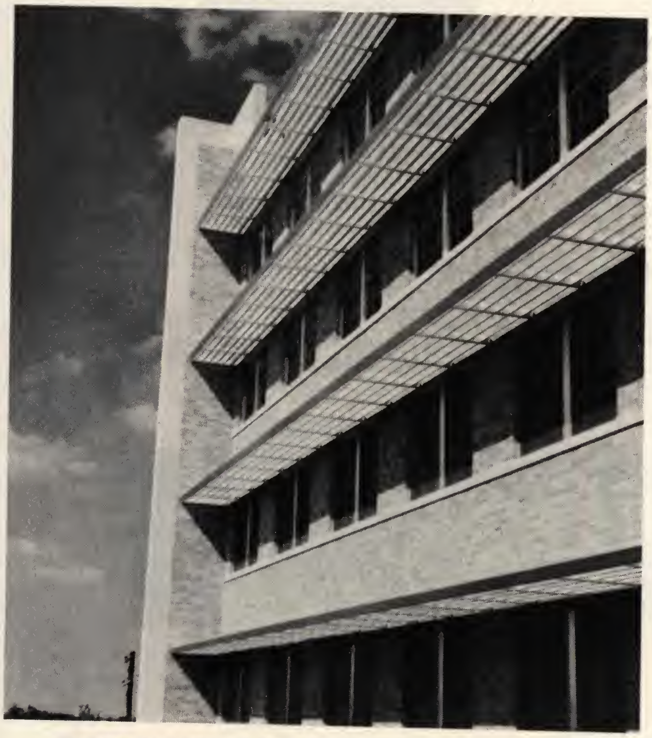
**anchorage** Of great importance to the architect is our success in having solved the problem of safe anchorage for a wide variety of building types and wall conditions. Detailed on the next page are a number of our various high strength, field-tested anchorages which are available from stock. Note the neat, unobtrusive lines of our castings. Our wedge-lock anchorage enables us to completely recess our castings in the wall, doing away with objectionable projections and visible fastenings. Our permanent mold castings have a neat, finished appearance and employ alloys that heat treat to a minimum strength of 36,000 psi.

**finishes** C-S Extruded Aluminum Sun Shades are supplied in mill finish and a wide variety of alumilite or etch and lacquer finishes. A considerable degree of eye-appeal may be achieved economically by the use of specialized finishes on the fascia alone. The specification of fascias in satin finish alumilite will add only slightly to the average job cost. Fascias may also be supplied in porcelain enamel colors or in a wide range of permanent epoxy base colors. (For detailed information on available C-S Finishes, see page 19.)

### suggested specifications

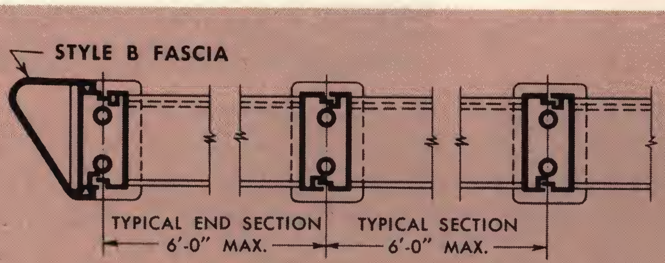
Furnish and install as indicated on drawings, C-S Extruded Aluminum Cantilever Sun Shades as manufactured by Construction Specialties, Inc., Cranford, New Jersey, (for West Coast use Escondido, California). Complete shop drawings to be submitted to the architect for review and approval. Sun Shades to be fabricated in entirety from extruded aluminum sections outriggers 6061 T6 alloy, minimum .109 gauge, blades and fascia of 6063 T5 alloy, minimum .081 gauge. All outriggers to be secured to the building structure by C-S Anchorage Part No. SA-5 (or C-S part No. as selected) and to be certified for a minimum live-load of 30 pounds per square foot of sunshade. All anchorages to be high strength aluminum alloy heat treated to develop a minimum strength of 36,000 psi. All anchor bolts and anchorage inserts shall be stainless steel. Individual sun shade sections to be lined up by use of a mating tongue-and-groove at the top and bottom between all sections. Expansion and contraction to be provided for at the spline joint and in the fascia.

The fascia of the Sun Shades shall be C-S Extruded Aluminum Fascia Style H-8 (or other C-S style desired). There shall be no bolts or holes through the fascia. All fascia expansion joints to have concealed expansion joint covers and provision for exact fascia line-up. Fascia members to be selected for trueness and unmarred face finish. All fascia to be polished to a satin finish and given a one-half hour, .0004 thickness anodize, with two protective coats of clear CS 64 butyrate lacquer. All other extruded aluminum sections to be given a six minute caustic etch (or other finish desired) and given two coats of CS 64 clear butyrate lacquer. All erection to be performed in a thoroughly workmanlike manner in accordance with the manufacturer's approved procedures. All blades, outriggers and fascia to line up straight and true. Sun Shades to be fabricated by a manufacturer with a minimum of two years experience in this work.

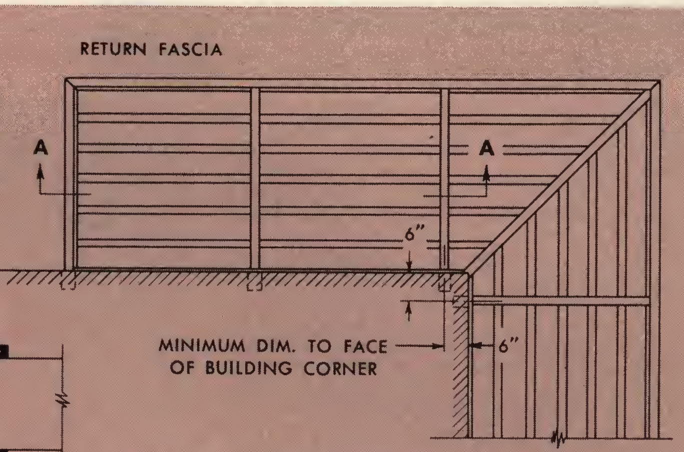


**St. Joseph's Hospital, Fort Worth, Texas**
**Architect, Joseph R. Pelich**

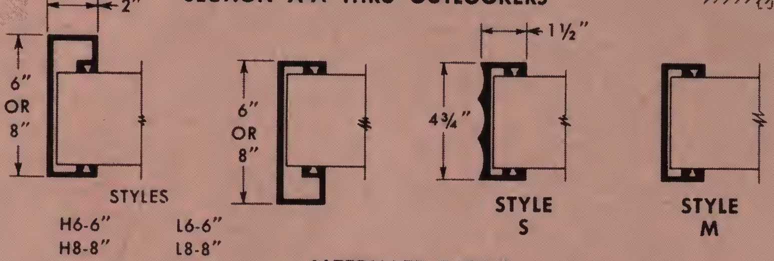
Multi-story installation of C-S Cantilever Sunshade used on south elevation. Sunshade furnished in C-S standard etch and lacquer finish.



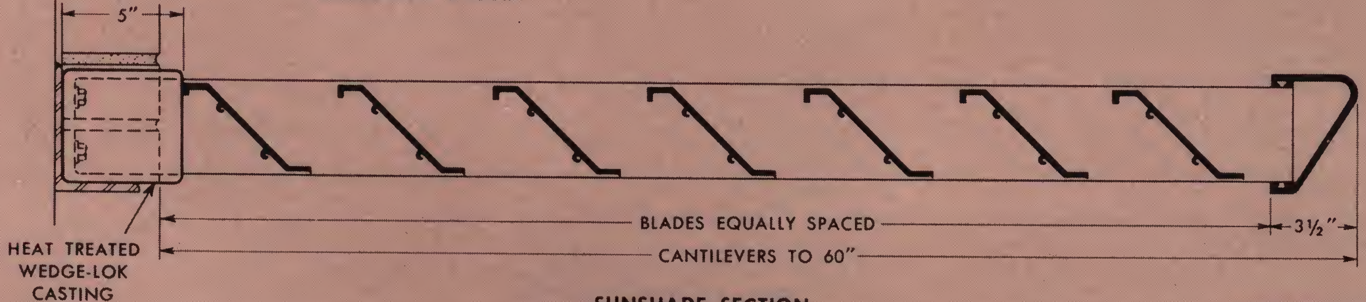
SECTION A-A THRU OUTLOOKERS



PLAN VIEW OF TYPICAL SUNSHADE CORNER

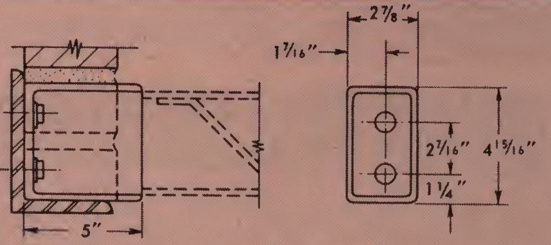


ALTERNATE FASCIA

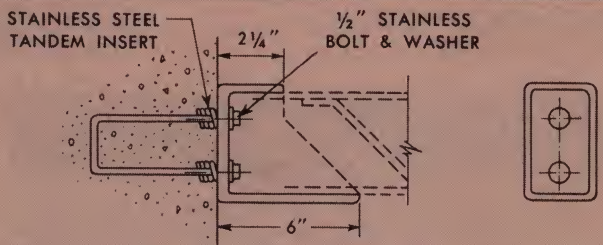


SUNSHADE SECTION

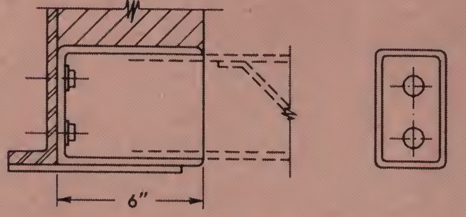
SCALE: 1½"=1'-0"



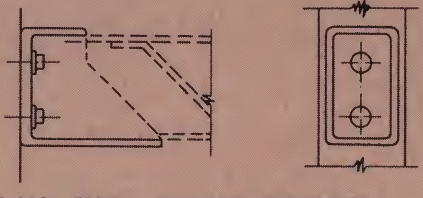
PART NO. SA-5 — STANDARD LINTEL & MASONRY WALL



PART NO. FM-2 — FACE MOUNTED

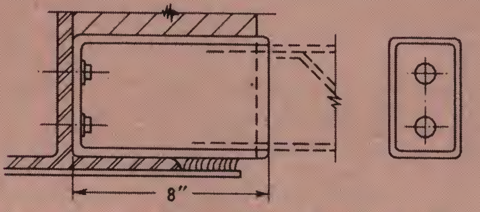


ALL DIMENSIONS TYPICAL

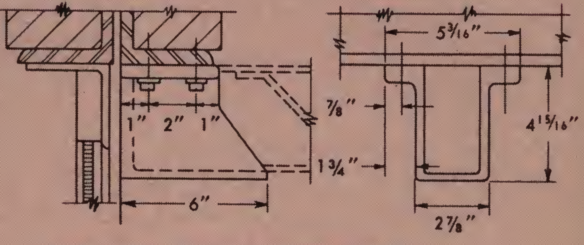


PART NO. FM-2 — MULLION MOUNTED

PART NO. SA-6 — INSET MOUNTED — FLUSH FACE



EXCLUSIVE WEDGE-LOK ANCHORAGE SECURES ALL OUTRIGGERS



PART NO. SA-8 — DEEP SET ANCHORAGE

PART NO. LO-10 — UNDER LINTEL

ENTS PENDING

SCALE: 1½"=1'-0"

## horizontal suspended sun shades

C-S Suspended Sun Shades, fabricated from the same aluminum extrusions as our Cantilever Sun Shades, are primarily intended for installations where adequate structural support at the root of the Sun Shade is not available, or where such support is available only at centers greater than 7 feet.

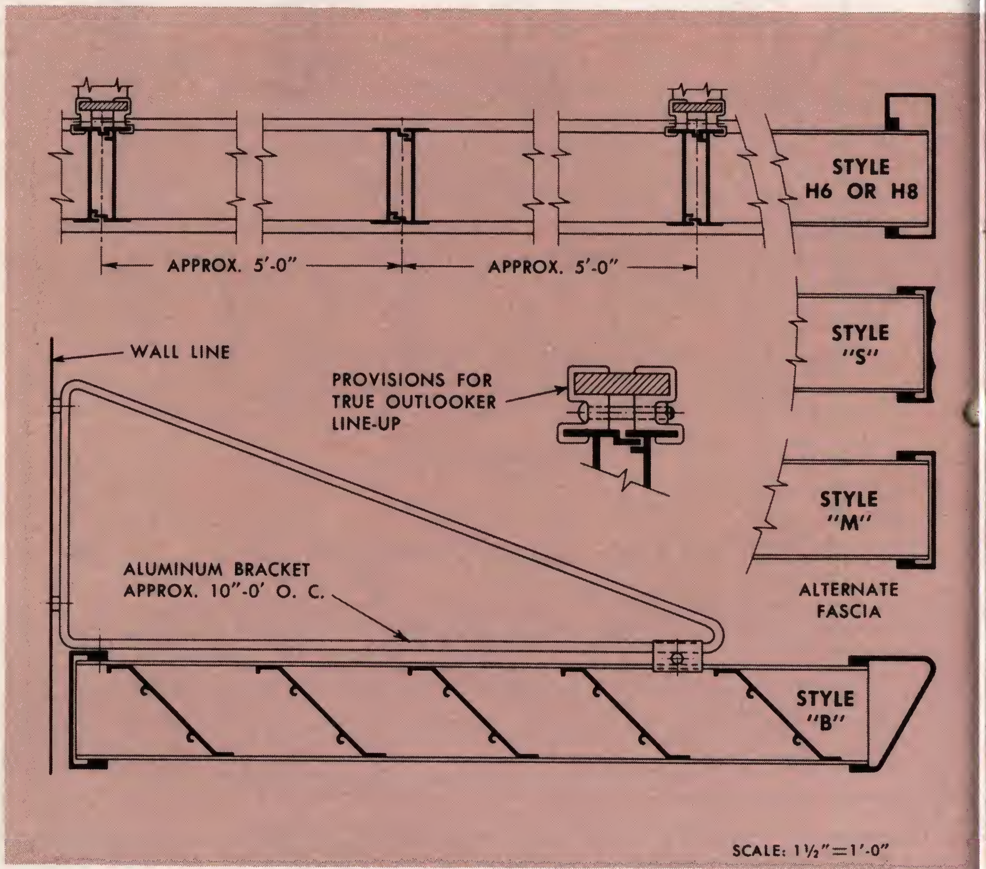
The all-aluminum suspension hangers are neatly designed to effectively secure the Sun Shade against up-lift as well as gravity loads.

Our Suspended Sun Shades may be supplied in a variety of alumilite or etch and lacquer finishes. A considerable degree of eye appeal may be achieved economically by the use of specialized finishes on the fascia alone. Where color is desired, matte or gloss finishes in epoxy coatings are recommended for permanency and economy.

### suggested specifications

Furnish and install, as indicated on drawings, C-S Extruded Aluminum Rainproof Ventilated Canopies as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast use Escondido, California). The Sun Shades are to be fabricated entirely from extruded aluminum sections, minimum .081 gauge, 6063 T5 alloy. Individual sun shade sections to be lined up by use of a spline joint along the top and bottom between all members. Expansion and contraction to be provided for at the spline joint and in the fascia.

The fascia of the Sun Shades shall be C-S Extruded Aluminum Fascia Styles (or other C-S styles). All C-S fascia to be polished to a satin finish and given a one-half hour alumilite with two protective coats of CS 64 butyrate lacquer. All other extruded aluminum sections to be given an etch finish and one coat of CS 64 butyrate lacquer.



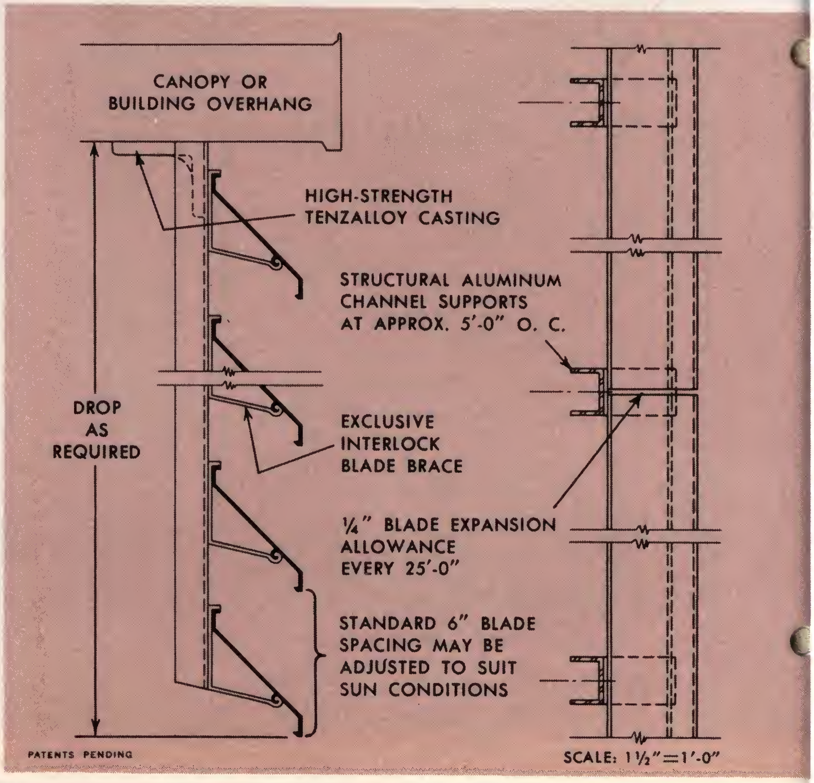
## horizontal line sun curtain

Our Horizontal Line Sun Curtain is a highly effective and most economical Sun Shade. Any degree of shading may be achieved regardless of orientation or season by adjusting blade spacing and total drop to the requirement.

The use of this style shade requires an overhang from which the unit is suspended. Inside and outside corners may be provided. This unit is completely shop fabricated to approved drawings and shipped knocked down to the job site for easy erection. C-S exclusive Heavy Gauge Extruded Interlock Blade Braces hold the blades securely in position and provide positive blade line-up at all expansion joints. Construction of heavy gauge extruded sections assures high strength. This horizontal line sun curtain is competitive with sheet metal installations of lighter gauge.

### suggested specifications

Furnish and install as indicated on the drawings, C-S Extruded Aluminum Horizontal Line Sun Curtains, as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California). Complete shop drawings to be submitted for approval. All aluminum sections to be 6063 T5 alloy, minimum .081 gauge with structural reinforcing bosses. All blade braces shall be heavy gauge extruded aluminum with positive blade interlock. All parts to be given a six minute etch and one coat of CS 64 butyrate lacquer. All erection to be made in accordance with manufacturer's approved procedures.


CANOPY OR BUILDING OVERHANG
HIGH-STRENGTH TENZALLOY CASTING
STRUCTURAL ALUMINUM CHANNEL SUPPORTS AT APPROX. 5'-0" O. C.
DROP AS REQUIRED
EXCLUSIVE INTERLOCK BLADE BRACE
¼" BLADE EXPANSION ALLOWANCE EVERY 25'-0"
STANDARD 6" BLADE SPACING MAY BE ADJUSTED TO SUIT SUN CONDITIONS
PATENTS PENDING
SCALE: 1½"=1'-0"

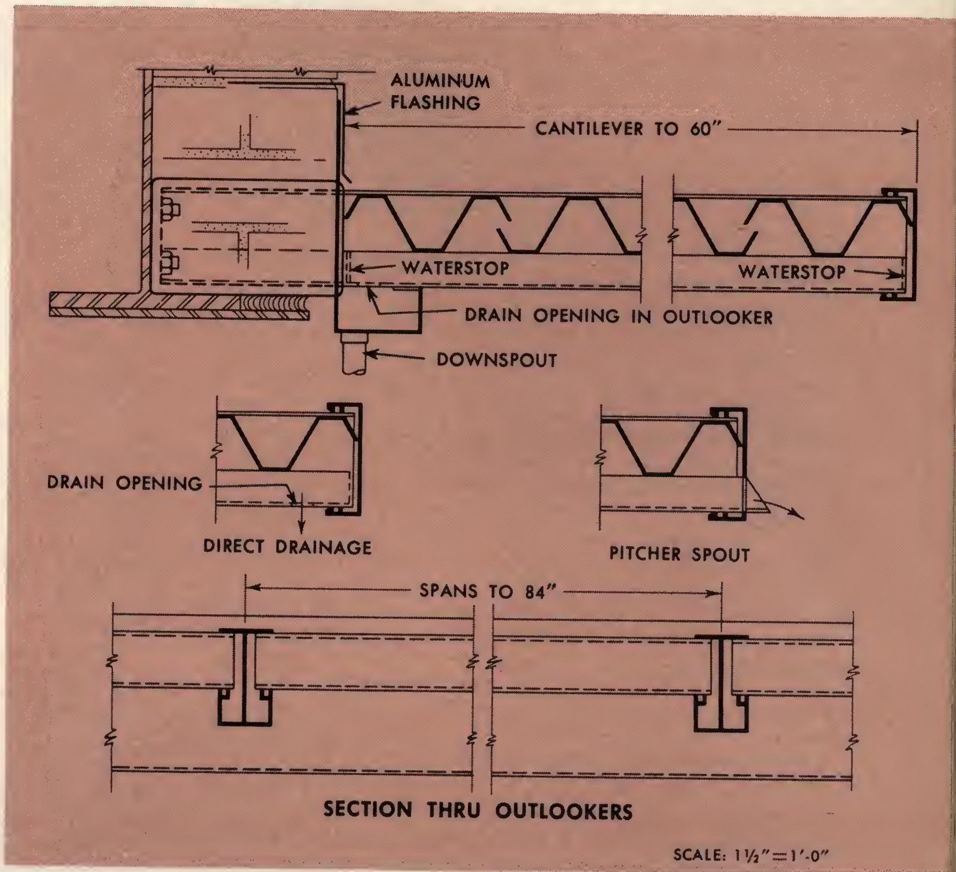
## ventilated rainproof canopy

The ventilated rainproof canopy is designed for use in runs of our standard cantilever and suspended sunshades over entrance areas. The blade design provides air circulation to prevent the entrapment of hot air under the canopy. These units are ruggedly built with ⅛" structural outriggers and fascia. They will withstand heavy snow and ice loads. The W design blades are fabricated of 12 gauge extruded aluminum and feature a #10 Fluted Pattern on both faces.

### suggested specifications

Furnish and install, as indicated on drawings, C-S Extruded Aluminum Rainproof Ventilated Canopies as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast use Escondido, California). Canopies to be fabricated in entirety from extruded aluminum 6063 T5 alloy, minimum .081 gauge with reinforced structural outriggers and fascia members. All anchorages to be high strength aluminum alloy, heat treated to develop a minimum strength of 36,000 psi. All canopies certified for a minimum live-load of 30 pounds per square foot. Drain connections shall be supplied as detailed.

Fascia shall be C-S Extruded Aluminum Fascia Style H-8. All blades to have a #10 Fluted Pattern finish. Complete canopy to have a six minute etch finish and given one coat of CS 64 butyrate lacquer.



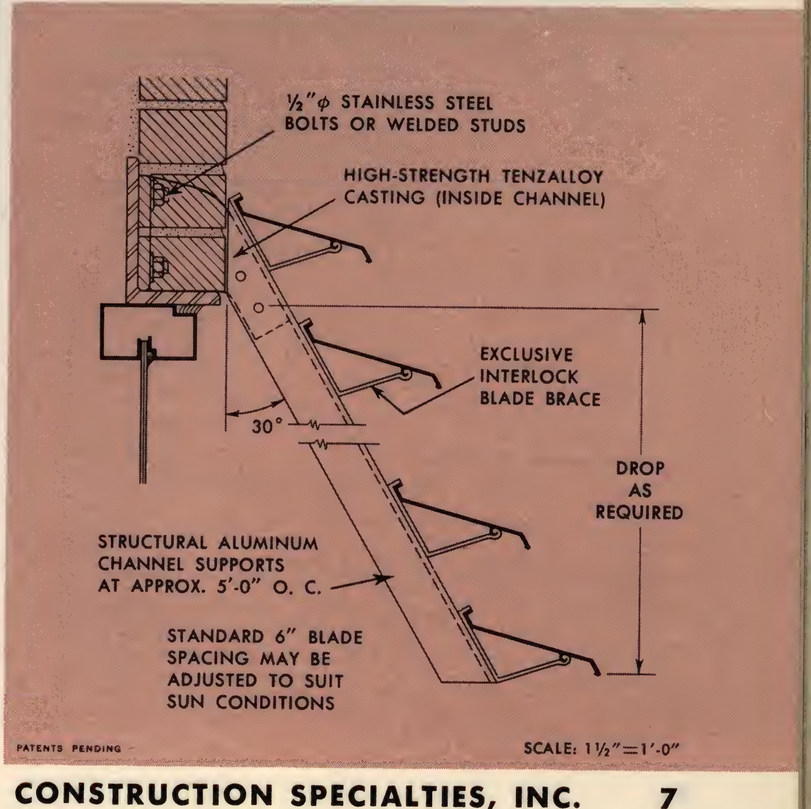
## angular sun curtain

C-S Angular Sun Shades offer an efficient awning type sun shade in heavy gauge extrusions. The blades conceal the outrigger supports and present an attractive horizontal line to the face of the building. Inside and outside corners may be furnished. C-S blade brace effectively lines up and secures the blades to the outriggers. A minimum of shop fabrication through the use of extruded sections, and the ease of erection afforded by the C-S blade brace, make this sun shade most economical.

### suggested specifications

Furnish and install, as indicated on the drawings, C-S Angular Sun Shades as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California). Sun Shades to be fabricated from extruded aluminum sections 6063 T5 alloy, minimum .081 gauge. Angular Outriggers to be extruded channel sections minimum .125 gauge. All anchorage castings to be high strength aluminum alloy, heat treated to develop a minimum strength of 36,000 psi. Anchorage bolts and anchorage inserts to be stainless steel.

Blades shall be secured to outriggers and aligned at all expansion joints by heavy gauge extruded aluminum interlock blade braces. All blades shall be erected to line up straight and true. All aluminum to be given a six minute etch and one coat of CS 64 butyrate lacquer. Sun shade and anchorages shall be certified structurally to meet maximum wind loadings.


½"φ STAINLESS STEEL BOLTS OR WELDED STUDS
HIGH-STRENGTH TENZALLOY CASTING (INSIDE CHANNEL)
EXCLUSIVE INTERLOCK BLADE BRACE
30°
DROP AS REQUIRED
STRUCTURAL ALUMINUM CHANNEL SUPPORTS AT APPROX. 5'-0" O. C.
STANDARD 6" BLADE SPACING MAY BE ADJUSTED TO SUIT SUN CONDITIONS
PATENTS PENDING
SCALE: 1½"=1'-0"

# cantilever airfoils

## features

The C-S Airfoil Cantilever Sun Shades were specifically developed to span greater distances between anchorage supports. A span of 20 feet can be made without intermediate supports and with no visible deflection in airfoils under standard live loads. A range of airfoil sizes and fascia is available so that the architect may adjust the module of the sun shade to his building.

Design variations through the use of the Airfoil Cantilever, may be incorporated at no premium in cost. This type of installation will cost no more than our standard cantilever sunshade which has proved so popular and economical in recent years.

**aluminum outriggers** Our aluminum outriggers are heavy duty structural tubes capable of cantilevering up to 7 feet as shown in the table below. Internal, concealed anchorages secure outriggers to the building structure. Fascia is secured to the outrigger by concealed fastenings with line-up adjustment.

**aluminum enclosed steel outrigger** Where greater projections are involved, or a large module is desired, the use of a structural steel outrigger may be engineered to handle the required projection. The outrigger is enclosed in an .081 gauge aluminum skin. All aluminum is insulated from steel by neoprene gaskets. The style E Extruded Aluminum Fascia is adjustable to cap any aluminum enclosed steel outrigger up to 12½ inches in depth.

**finishes** Airfoil blades may be finished in a plain face or a #10 fluted pattern. A considerable degree of eye-appeal may be achieved economically on the sun shade by the use of specialized finishes on the fascia alone. The specification of fascia in permanent epoxy base colors or porcelain enamel on aluminum, will add little to the average job cost.

A 204 R1 anodize on all fascia members and a six minute caustic etch and butyrate lacquer finish on the balance of the sunshade is recommended as a minimum specification.

**engineering** For details of existing installations or for specific engineering on blades, outriggers or anchorages, contact the home office.

## suggested specifications

Furnish and install as indicated on drawings, C-S Airfoil Cantilever Sunshades as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California). Sunshades to be fabricated in entirety from extruded aluminum sections, aluminum outriggers 6061 T6 alloy, blades and fascia to be 6063-T5 alloy. All outriggers to be a minimum of .125 gauge and to be secured to the building structure by C-S anchorages. All anchorages to be high strength aluminum alloy, heat treated to develop a minimum strength of 36,000 psi. All anchor bolts and anchorage inserts to be stainless steel.

All blades to be airfoil shape, one piece seamless 6063-T5 alloy, extruded aluminum. (See table for size and wall thickness). All blades to be secured to outriggers with aluminum or stainless steel fastenings with provision for expansion and contraction. All fascias to be structural members C-S style L (or E — see details). There shall be no bolts or holes through the fascia. All fascia expansion joints to have concealed expansion joint covers and provision for exact fascia line-up. Fascia members to be selected for trueness and unmarred finish. All blades to have a #10 fluted pattern surface. All fascia to be polished to a satin finish and given a one-half hour alumilite and two coats of CS 64 butyrate lacquer. All other extruded aluminum sections to be given a six minute etch finish (or other finish desired see page 19), and given two coats of CS 64 butyrate lacquer.

Complete shop drawings and detailed engineering covering anchorage, outriggers and blades for live-loads of 20 psf (for alternate loads, see table) shall be submitted to the architect for review and approval.

All erection to be performed in a thoroughly workmanlike manner in accordance with manufacturer's approved procedures. All blades, outriggers and fascia to line up straight and true. Sunshades to be fabricated by a manufacturer with a minimum of two year's experience in this work.

Recommended cantilever projections
Standard aluminum outlooker and anchorage

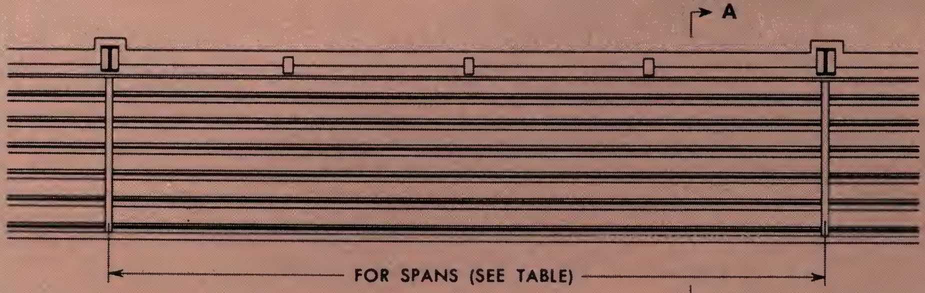
| C. to C. Spacing of Outlookers, Feet | Live Load (psf) | Recommended Maximum Projection, Feet |
|---|---|---|
| 8'-0" | 20 | 7'-6" |
| | 30 | 6'-0" |
| 10'-0" | 20 | 6'-6" |
| | 30 | 5'-0" |
| 12'-0" | 20 | 6'-0" |
| | 30 | 4'-6" |
| 15'-0" | 20 | 5'-0" |
| | 30 | 4'-0" |
| 20'-0" | 20 | 4'-6" |
| | 30 | 3'-0" |

**sizes and spans available**

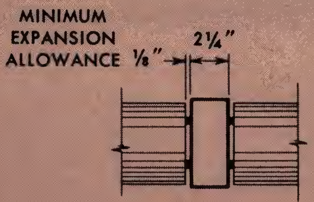
| Airfoil Size Inches | Wall Thickness Inches | Maximum Recommend Spans (Blades Set At 45° Angle) | | | Finish Available |
|---|---|---|---|---|---|
| | | 10 psf * | 20 psf * | 30 psf * | |
| 6" x 1⅛" | .047 | 10'-6" | 9'-6" | 8'-6" | Plain or #10 Fluted Pattern |
| 7½" x 1½" | | 15'-0" | 12'-6" | 10'-0" | |
| 9" x 1¾" | | 17'-0" | 14'-6" | 12'-0" | |
| 12" x 2" | .051 | 20'-0" | 17'-0" | 14'-0" | |

* Vertical Live Load

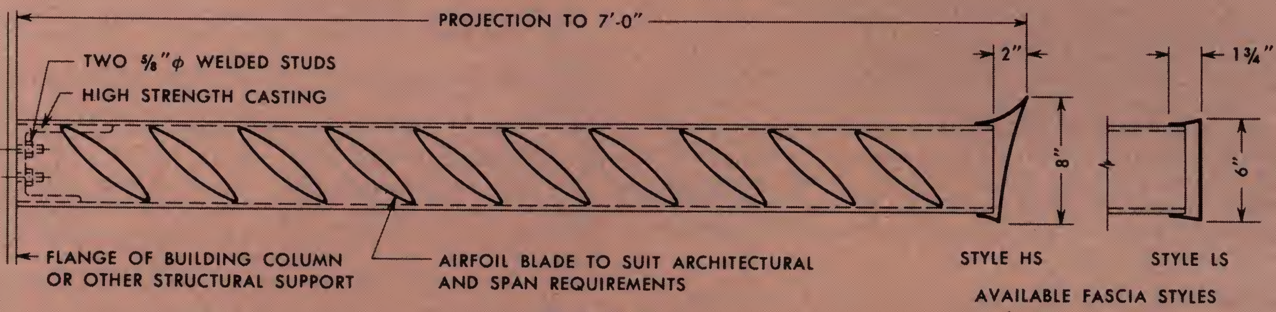
**Arrowhead High School, Hartland, Wisconsin**
**Architect, Durrant and Bergquist**
C-S Cantilever airfoil sunshade used in window wall application.



PLAN



CONNECTION DETAIL AIRFOIL TO OUTLOOKER


PROJECTION TO 7'-0"
TWO ⅝"φ WELDED STUDS
HIGH STRENGTH CASTING
FLANGE OF BUILDING COLUMN OR OTHER STRUCTURAL SUPPORT
AIRFOIL BLADE TO SUIT ARCHITECTURAL AND SPAN REQUIREMENTS
2"
8"
1¾"
6"
STYLE HS
STYLE LS
AVAILABLE FASCIA STYLES

SECTION A-A

## ALUMINUM OUTLOOKERS

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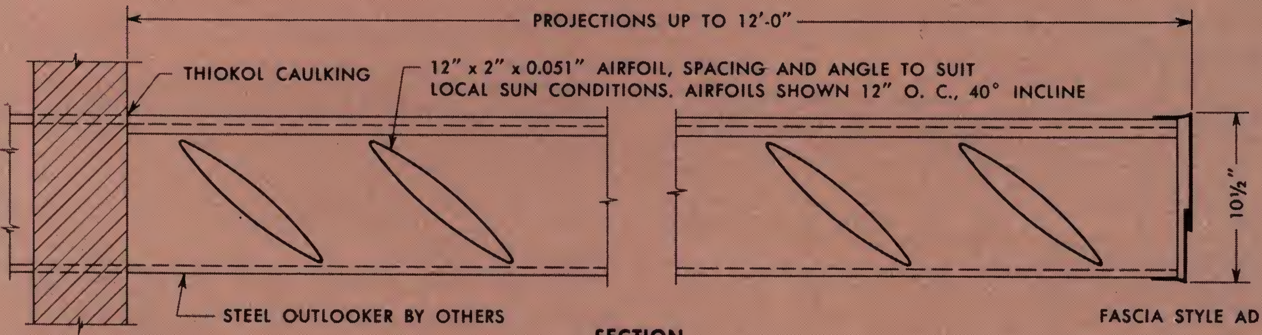
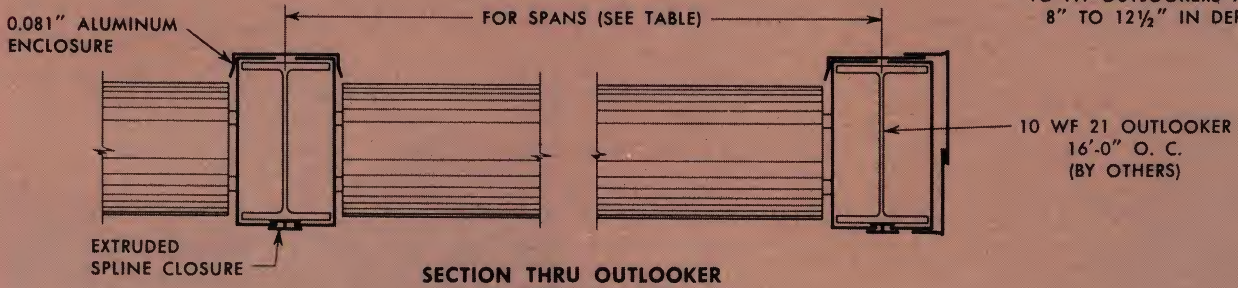

PROJECTIONS UP TO 12'-0"
THIOKOL CAULKING
12" x 2" x 0.051" AIRFOIL, SPACING AND ANGLE TO SUIT LOCAL SUN CONDITIONS. AIRFOILS SHOWN 12" O. C., 40° INCLINE
10½"
STEEL OUTLOOKER BY OTHERS
FASCIA STYLE AD

SECTION

THIS STYLE AVAILABLE TO FIT OUTLOOKERS FROM 8" TO 12½" IN DEPTH


0.081" ALUMINUM ENCLOSURE
FOR SPANS (SEE TABLE)
10 WF 21 OUTLOOKER 16'-0" O. C. (BY OTHERS)
EXTRUDED SPLINE CLOSURE

SECTION THRU OUTLOOKER AND RETURN FASCIA

## ALUMINUM ENCLOSED STEEL OUTLOOKERS

A TYPICAL INSTALLATION FOR A 20 PSF LINE LOAD IS DETAILED ABOVE

ENTS PENDING

# horizontal airfoils

## features

The structural strength and clean line of the C-S Horizontal Air Foil provides an almost unlimited architectural design application. The C-S Seamless Airfoils were specifically developed to span greater distances between anchorage supports. A span of 20 feet can be made without intermediate supports and with no visible deflection in airfoils under standard live loads. A range of airfoil sizes is available so that the architect may adjust the module of the sunshade to his building. Properly designed Horizontal Fixed Airfoils provide excellent protection from the sun while permitting diffused light to enter.

**economy** C-S Airfoils are mass-produced to provide basic economies where this sunshade is used. The strong seamless sections are light in weight. The long span strength eliminates the necessity for intermediate supports and fastenings to the building structure. The light independent units and field tested anchorage provide easy, economical erection. Freight costs are reduced because the complete assembly is light in weight and need not be shipped in bulky sections. Plants on both East and West coasts further reduce freight costs.

**finishes** Airfoil blades may have a smooth surface or #10 fluted pattern finish. This shape lends itself to an economical application of the various anodize or color finishes, available for aluminum. Porcelain enamel may be applied on our airfoils to match other elements in a building. Economical, permanent colors are available by specifying epoxy base coatings. A minimum finish specification of a six minute caustic etch with two coats of C-S 64 butyrate lacquer is recommended.

## suggested specifications

Furnish and install as indicated on drawings, C-S Fixed Horizontal Air Foil Sunshades as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast use Escondido, California). All sunshade blades to be airfoil shape, one piece seamless 6063 T5 alloy, extruded aluminum (note size and wall thickness from table). Neat end closures shall be provided for all airfoil blades. All anchorages to be high strength aluminum alloy, heat treated to develop a minimum strength of 36,000 psi. All fastenings and anchorage inserts to be of stainless steel. Anchorage devices to be completely concealed and to structurally secure the blade in position. Positive provision shall be made for expansion and contraction.

All blades to have a #10 fluted pattern surface free of mars and blemishes and to have a 215 R1 anodize finish, with two coats of CS 64 clear butyrate lacquer. A certification and field test on the anodize finish shall be furnished.

(Note—for color finishes, porcelain enamel or epoxy, see page 19.)

Complete shop drawings and detailed engineering covering anchorages and blades for live loads of 20 psf shall be submitted to the architect. (Specify alternate live load from table.)

All erection to be performed in a thoroughly workmanlike manner in accordance with manufacturer's approved procedures. There shall be no visible fastenings in the completed installation. Sunshades to be fabricated by a manufacturer with a minimum of two year's experience in this type work.

## sizes available

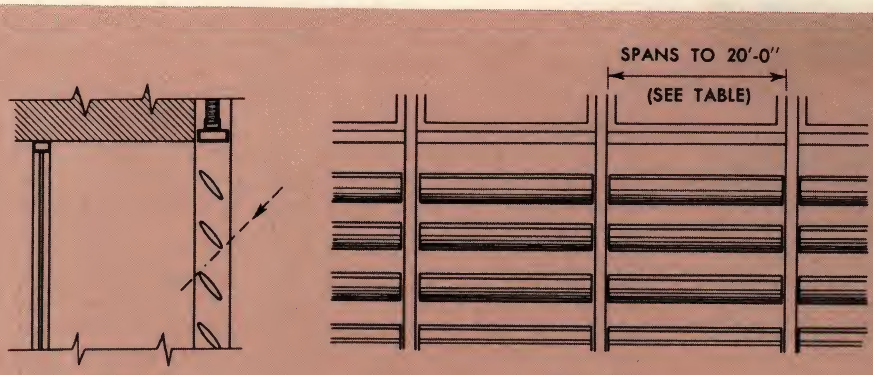
| airfoil size, inches | wall thickness, inches | maximum recommended span blades set in horizontal plane, feet | | |
|---|---|---|---|---|
| | | 10 psf * | 20 psf * | 30 psf * |
| 6 x 1⅛ | .047 | 10 | 9 | 8 |
| 7½ x 1½ | | 14 | 12 | 9 |
| 9 x 1¾ | | 16 | 14 | 12 |
| 12 x 2 | .051 | 18 | 15 | 13 |
| 15½ x 2 | | 19 | 16 | 14 |
| 18 x 2½ | .064 | 20 | 18 | 16 |
| 22 x 3 | .080 | 22 | 20 | 18 |

* Live Load

Detailed analysis of the structural properties for each airfoil section, is available to the architect or engineer upon request.

**Greyhound Bus Terminal, Detroit, Michigan**
**Architect, Arrasmith and Tyler**

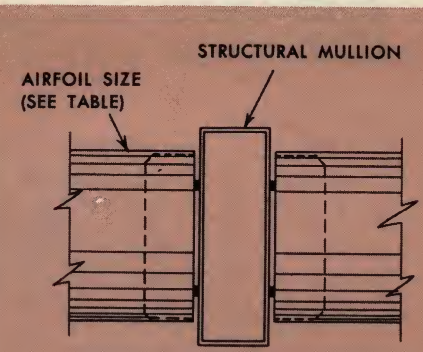
C-S Fixed airfoils used horizontally in 12 inch x 2 inch size completely encircles this terminal. 22 inch airfoils are used to add dramatic interest over entrance.



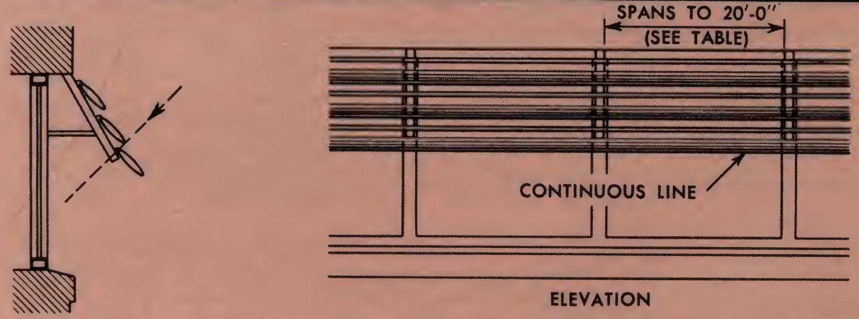
SECTION

ELEVATION

**MULLION MOUNTED AIRFOIL**



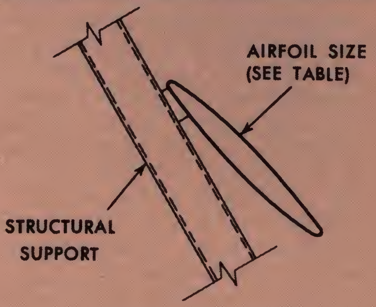
**MOUNTING DETAIL**



ELEVATION

SECTION

**AWNING TYPE AIRFOIL**



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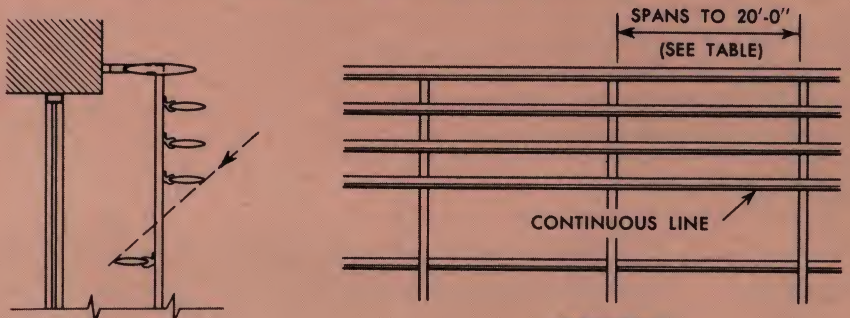
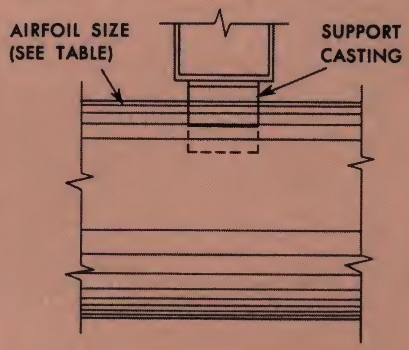


SECTION

ELEVATION

**OFFSET MOUNTED AIRFOIL**



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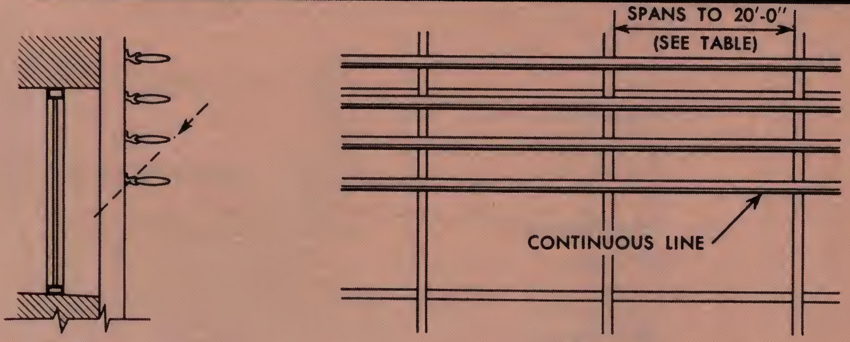
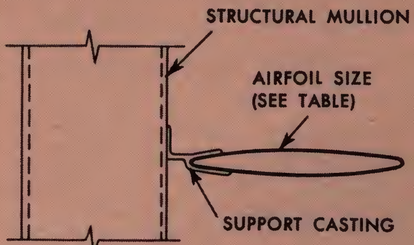


SECTION

ELEVATION

**PROJECTED AIRFOIL**



**MOUNTING DETAIL**

TENTS PENDING

## vertical airfoils

### features

The structural qualities of the C-S seamless airfoil, the cleanness of shape and simplicity of line, offer the architect an unusual design opportunity in the application of sun controls.

C-S Fixed Vertical Airfoils are well-suited for use on east or west elevations, with the panels set to deflect the morning or afternoon sun. On south elevations, a highly effective fixed sun shade may be designed by combining large fixed vertical airfoils placed perpendicular to the building wall on centers of window mullions with a C-S horizontal sun shade connecting the vertical panels at the head of the windows.

**structural characteristics** The C-S Airfoil structural shape has high strength characteristics because of its seamless hollow construction. The blades are unusually strong and rigid. Under heavy wind loads of 30 pounds per square foot, maximum unsupported heights of up to 20 feet are easily obtained. The table below shows the wide range of rugged C-S fixed vertical airfoils available.

**anchorage** C-S has developed a wide variety of standardized extruded and cast devices to secure our airfoil shapes both for recessed and projected mounting. Anchorages are neat, strong and unobtrusive. They incorporate line-up adjustment to provide ease in field erection. For details on our anchorage devices and their application, contact our home office.

**finishes** Our standard airfoils may be specified in plain face or #10 fluted pattern. We recommend the fluted pattern surface in an anodize or an etch and lacquer surface to effectively diffuse the sun's rays. Where an economical color is desired on plain or patterned surface, we recommend epoxy resin coatings as detailed fully on page 19. Quality porcelain enamel on aluminum can be supplied on all our plain surface airfoils. Samples of all finishes may be had on request.

**economy** C-S Airfoils are mass produced shapes, light in weight, gaining their strength from one piece seamless construction. These factors combined with the ease in erection using C-S anchorages, give a quality installation at a remarkably economical cost.

### suggested specifications

Furnish and install as detailed indicated on the drawings, C-S Fixed Vertical Seamless Airfoil Sunshade as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California).

All blades shall be one piece seamless airfoil shapes, 12" x 2", minimum gauge .051 (see table for other sizes and gauges), 6063 T5 alloy, extruded aluminum. Faces of blades shall have a #10 Fluted Pattern surface. All blades to be free of mars and blemishes and to receive a 215 R1 anodize .0008" thickness with two coats of clear CS 64 butyrate lacquer. Certification and field tests shall be required on anodize finish. (For alternate specifications of epoxy color coatings or porcelain enamel on aluminum, see page 19).

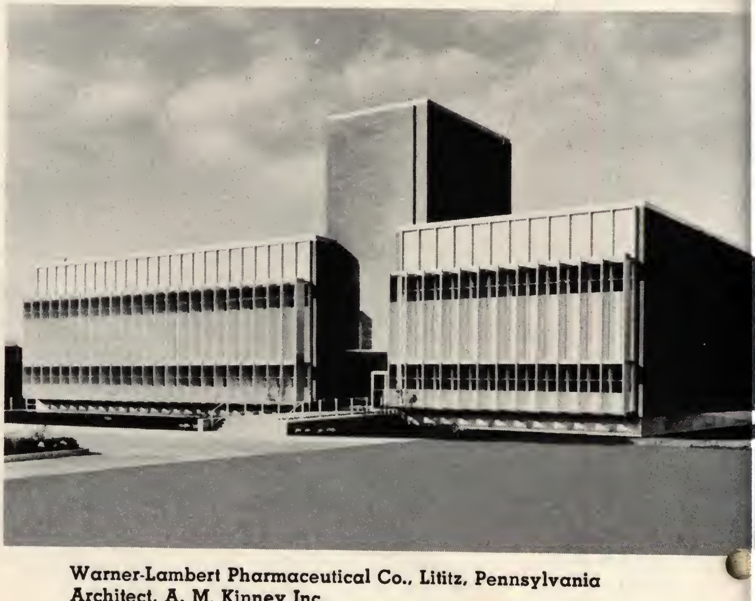
Horizontal joints shall be not less than 20 feet on centers. All joints shall have full perimeter internal line-ups. Ends of all blades shall have aluminum closures. There shall be no visible fastenings on faces of blades. Anchorages shall be positive and designed with adequate provision for expansion and contraction. Panels and anchorages shall be certified to meet maximum wind loadings. Complete shop drawings and detailed engineering covering blades and anchorages for wind pressures up to 30 psf (for alternate pressures see table), shall be submitted to Architect for review and approval.

All erection to be performed in a thoroughly workmanlike manner in accordance with the manufacturer's approved procedures. All blades to line up straight and true. Sun Shades to be fabricated by a manufacturer with a minimum of two year's experience in this work.

### sizes available

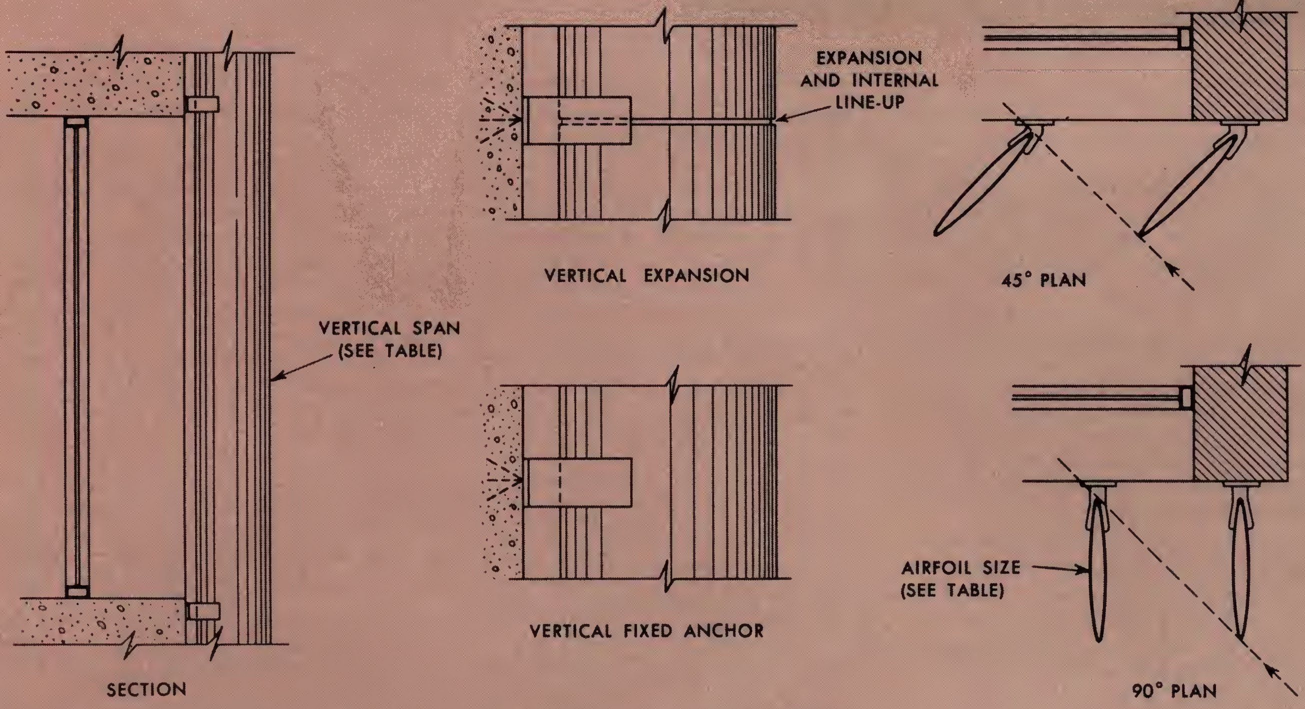
| airfoil size, inches | maximum unsupported height, feet | | wall thickness inches |
|---|---|---|---|
| | 20 psf * | 30 psf * | |
| 6 x 1⅛ | 9'0" | 8'0" | .047 |
| 7½ x 1½ | 12'0" | 10'0" | |
| 9 x 1¾ | 14'0" | 12" | |
| 12 x 2 | 17'0" | 14'0" | .051 |
| 15½ x 2 | 18'0" | 15'0" | |
| 18 x 2½ | 19'0" | 16'0" | .064 |
| 22 x 3 | 22'0" | 20'0" | .080 |

* Wind pressure



**Warner-Lambert Pharmaceutical Co., Lititz, Pennsylvania**
**Architect, A. M. Kinney Inc.**

Vertical airfoils combined with C-S Cantilever Sunshades to provide complete sun shading for a south elevation.



SECTION

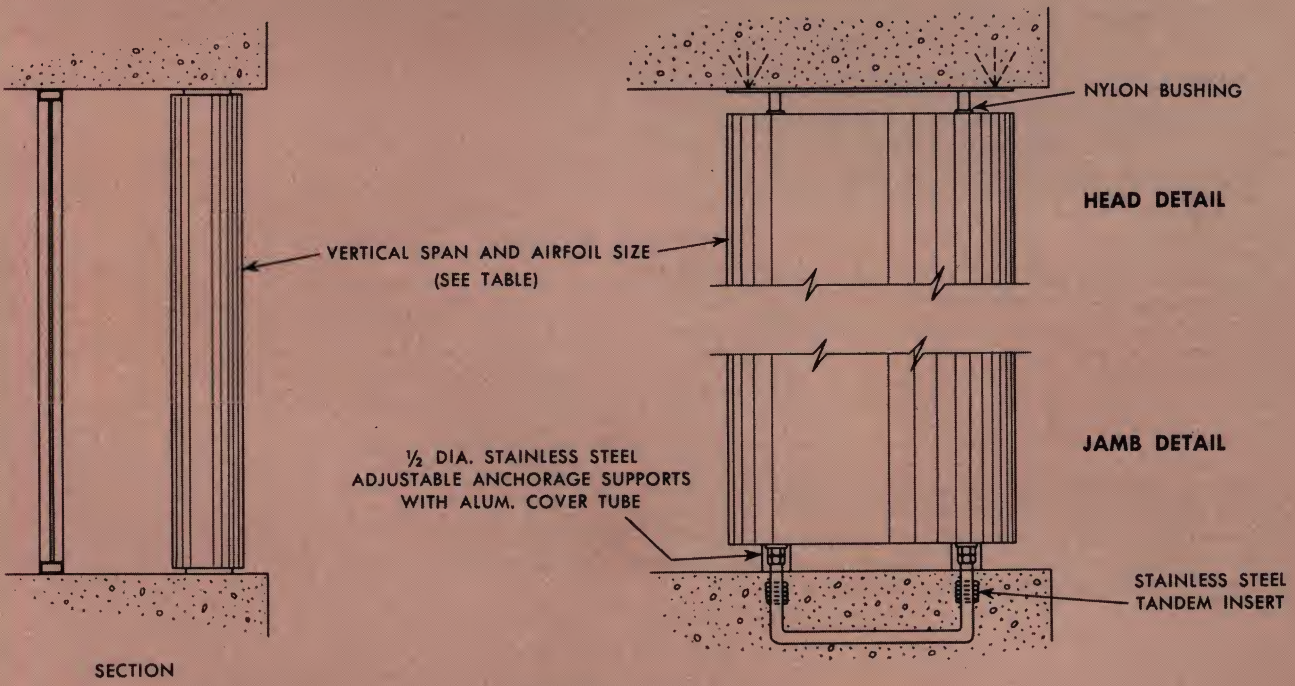
VERTICAL EXPANSION

45° PLAN

VERTICAL FIXED ANCHOR

90° PLAN

**PROJECTED VERTICAL AIRFOIL**



**HEAD DETAIL**

**JAMB DETAIL**

SECTION

**RECESSED VERTICAL AIRFOIL**

ENTS PENDING

## horizontal airfoil

### features

This new C-S Sunshade offers for the first time a Horizontal Operating Sun Control with all drive arms, gears, linkages, and torque rods concealed from view. The conventional gang bars, pivots and operators are now completely enclosed in a heavy gauge, neat extruded aluminum jamb or mullion. This construction together with the smooth clean outline of our airfoil blades presents a neat uncluttered appearance from both the inside and the outside of the building.

The C-S Horizontal Operating Airfoil will effectively control solar heat and glare while permitting soft diffused light to enter regardless of elevation. The horizontal line of the blades gives excellent vision characteristics from within the building. By the addition of light baffles at the head and sill, distracting sun light can be completely eliminated to darken auditoriums, school rooms, or lecture halls, when motion picture equipment or other visual-aids are used.

**finishes** The Horizontal Airfoil shape in either plain or #10 pattern surface is ideal for the economical application of any anodize or color finish. Commercial color may be introduced by specifying epoxy color coatings. A wide spectrum of epoxy color is available to the architect. We recommend the use of the #10 pattern surface with a six minute caustic etch and two coats of CS 64 butyrate lacquer as a minimum specification. (For complete finish information and specification, refer to page 19.)

**economy** The Horizontal Operating Airfoil Sunshade offers positive sun control with significant economies in both product and installation. C-S Airfoils are mass-produced. The strong seamless blades are light in weight. The long span strength makes it possible to eliminate mullions and the necessity for intermediate supports and fastenings to the building structure.

### controls

Manual controls offer individual control at the sunshade. They are practical, popular, and economical. C-S manual controls normally operate two units of sunshade from one mullion. Neat gear operators may be used to control up to 60 feet of sunshade from one manual operator.

**economical electric controls** may also be supplied to be operated by a manual pushbutton station located with visual reference to the sunshade. Our model SS 110 electric operator is mounted to the mullions and will easily handle two sunshade sections. A single control station may be used to control all sunshades on one elevation or a number of stations may be located to control particular areas.

**automatic controls** to position sunshade without supervision may be incorporated in any installation of C-S Horizontal Airfoil Sunshades. One unit is required for each elevation. A manual automatic selector switch is included for optional manual controls of each elevation independent of the automatic control.

### suggested specifications

Furnish and install, as indicated on drawings, C-S Operating Horizontal Airfoil Sunshades as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California). All sunshade operating blades to be one-piece seamless airfoil shape of extruded aluminum 6063 T5 alloy (note size and wall thickness from table). Operating mullions shall be structural extruded aluminum tubes, minimum .081 thickness. All blades shall be center pivoted with zamac pinions operating in self-lubricating nylon bearings. All sunshades to be equipped with concealed drive arms and compensating bars to effect positive control of the blades. All drive arms and compensating bars to be assembled with stainless steel rivets with nylon bearings at all points of movement. All fastening devices shall be of stainless steel or aluminum.

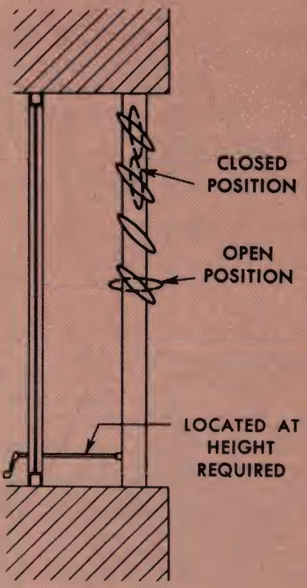
The exposed surface of all blades to have a #10 fluted pattern surface free of mars and blemishes. All aluminum to have a 215 R1 anodize finish with two coats of clear CS 64 butyrate lacquer. Certification in writing will be required on all anodized work. (For porcelain enamel or epoxy color finishes, see page 19.)

Electrical Operator Model SS 110 shall be supplied completely wired as a unit ready for installation on the sunshade. Operator shall be electrically driven sealed gear unit enclosed in weatherproof housing. The voltage shall be 110/220, 60 cycles, single phase. Maximum power requirement should be no greater than 100 VA. Motors shall have over-load protection. Control shall be by a manual push-button station supplied by the sunshade manufacturer. Control stations shall be located as indicated on the drawings. All motors and control boxes shall be completely prewired and bear the Underwriters' Label. All conduit and field wiring will be by others.

Complete shop drawings, electrical diagrams and detailed engineering on wind loading shall be submitted to the architect.

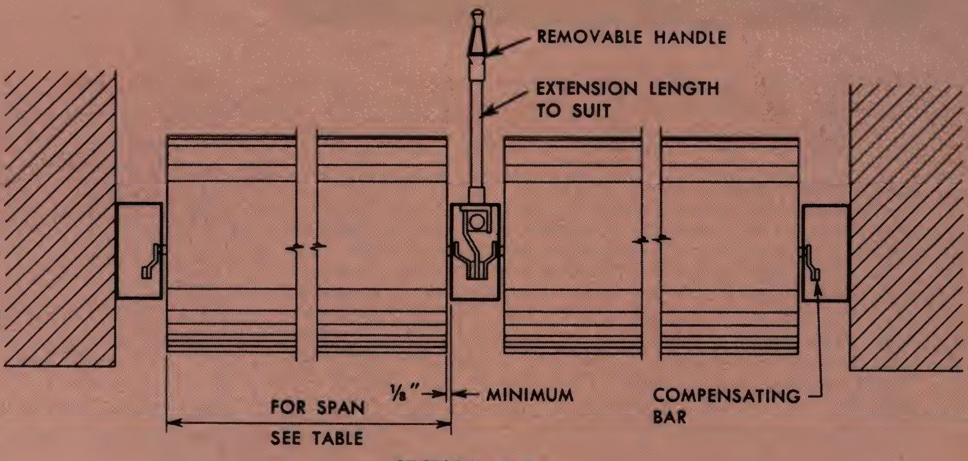
**sizes and spans**

| Airfoil Size Inches | Wall Thickness Inches | Maximum Recommend Spans, feet * | Finish Available |
|---|---|---|---|
| 7½" x 1½" | .047 | 8'-0" | Plain or #10 Fluted Pattern |
| 9" x 1¾" | .051 | 10'-0" | |
| 12" x 2" | .051 | 12'-0" | |

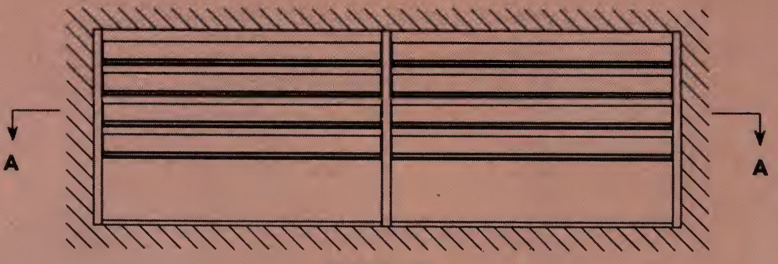


**SECTION**

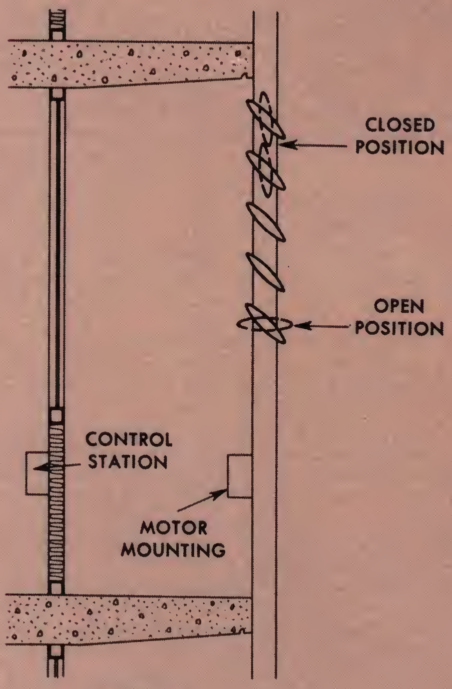
RECESSED INSTALLATION



**SECTION A-A**

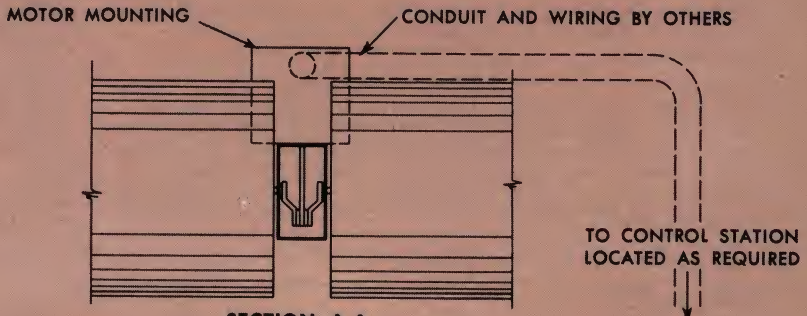


**ELEVATION**

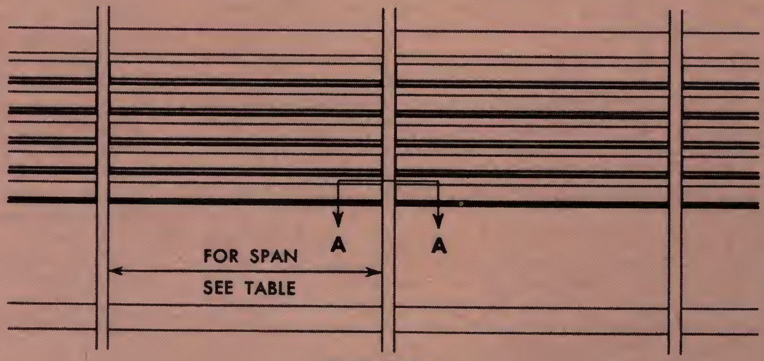


**SECTION**

PROJECTED INSTALLATION



**SECTION A-A**



**ELEVATION**

TENTED

# vertical operating airfoil

## features

C-S Operating Vertical Sunshades are ideally suited for shading large glass areas on all building exposures, either to block out low angular sun or east or west elevations, or to shield against sun through 180° azimuth on south elevations.

### intermediate size vertical operating sunshades

Where medium size modules are desired, these vertical operating sunshades offer an almost unlimited variety of architectural treatments. This range of operating sunshade is unusually clean and neat, since all drive bars, link arms, and operators are concealed in an extruded aluminum tube at sill or head. All blades are fitted with zamac pinions which operate in self-lubricating nylon bearings. Our intermediate size airfoils may be furnished with surrounds to frame the sunshade. These frames are fabricated in 6063 T5 alloy, extruded aluminum sections to provide crisp line and sharp corners, as well as structural strength. The corners of all surrounds are mitered, internally reinforced and mechanically fastened to form an integral corner.

### large module

**vertical operating sunshades** The larger size airfoil blades are recommended for use on monumental buildings or where blades of maximum dimension are desired. All blades have heavy gauge aluminum and closures. Pivots, mounting channels and drive bars are designed to withstand maximum wind and operational loads. Larger blades can be designed and fabricated to a particular architectural requirement.

**finishes** Our standard airfoils may be delivered in plain or #10 fluted pattern face. We recommend the #10 fluted pattern surface in an anodize or an etch and CS 64 butyrate lacquer to effectively diffuse the sun's rays. For dramatic effects in color, we recommend C-S epoxy resin coatings. Quality porcelain enamel on aluminum can also be supplied on all our plain surface airfoils. Samples of all finishes are available.

## controls

All C-S Vertical Operating Airfoils may be positioned by manual gear operators. However, the application of these hand controls is limited to comparatively short runs of sunshade. Fully automatic controls should be used on larger buildings to provide constant sunshading and uniform appearance without supervision.

### power units

Basic power units, available to actuate our vertical operating sunshades, may be either electric or hydraulic, depending upon the design requirements of the installation. The hydraulic power unit is usually located in a remote position from the sun controls with hydraulic lines running to one or a number of inconspicuous actuating cylinders at the louvers. These hydraulic units generally are used where large size airfoils or large areas of sun shade are required. Electric power units are located at the sun louver. One or more electric power units may be required for a particular run of sunshade. All louver vanes on one elevation are operated simultaneously.

**push-button positioning** This control station provides a manual push-button for Right-Left control of the sunshade blades. One unit is required for each elevation and should be located with visual reference to the blades.

**automatic time control** This control unit automatically positions the louver blades to block out the sun's rays during the daylight and to move the blades to the full open position at all other times. Control settings may be easily changed to suit seasonal requirements. A Manual-Automatic selector switch is included for optional manual control of each elevation, independent of the automatic control. The control station may be located as desired.

**automatic solar controls** The C-S Automatic Solar Control is actuated by sun intensity, automatically controlling the vertical operating sunshades so that they at all times shield glass areas from the direct rays of the sun. The solar control automatically opens the sun shades to the "full open" position during periods of shade or at night. The control must be located in an unshaded area. One unit is required for each elevation. An automatic-manual selector control is incorporated to provide optional manual control when desired. The automatic control is simply re-activated by a reset push-button.

## sizes available

| airfoil size, inches | wall thickness, inches | recommended maximum height, feet | surface available |
|---|---|---|---|
| 6" x 1⅛" | .047 | 8'-0" | Plain or #10 Fluted Pattern |
| 7½" x 1½" | | 11'-0" | |
| 9" x 1¾" | | 13'-0" | |
| 12" x 2" | .051 | 15'-0" | |
| 15½" x 2" | | 17'-0" | |
| 18" x 2½" | .064 | 18'-0" | |
| 22" x 2½" | .080 | 19'-0" | |

* Based on 20 psf wind pressure.

## suggested specifications

### intermediate size vertical operating sunshades

Furnish and install, as indicated on drawings, C-S Operating Vertical Sunshades as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California). All operating blades shall be one-piece seamless airfoil shapes, 12" x 2" minimum .051 gauge (see table for other sizes and gauges), 6063 T5 alloy extruded aluminum. There shall be no exposed fasteners or joints on the surface of the blades. All blades shall have zamac alloy pinions operating in self-lubricating nylon bearings. All operating bars, compensating bars and linkage shall be completely enclosed in continuous extruded aluminum tube supports at sill and head. All louver blades to operate in unison and parallel. Anchorages shall be neat and positive. All anchorages and fastening devices shall be of stainless steel or aluminum. All blades, anchorages and supports shall be certified structurally to be maximum wind-loading.

Face of all blades shall have a #10 fluted pattern surface. All blades to be free of mars and blemishes. All aluminum to receive a #215 R1 anodize, .0008 inch thickness, with two coats of clear CS 64 butyrate lacquer. Certification tests shall be required on anodize finish (for alternate finishes see page 19).

Electric operators shall be supplied completely wired as a unit ready for installation on the sunshade. Operators shall be electrically driven geared units enclosed in weatherproof housings. Input voltage shall be 110/220, 60 cycles, single phase. Control shall be by manual push-button station supplied by the sunshade manufacturer. Control station shall be located as indicated on the drawings. All motors and control boxes shall be completely prewired and ready for field installation. All conduit and field wiring will be by others.

### large module vertical operating sunshades

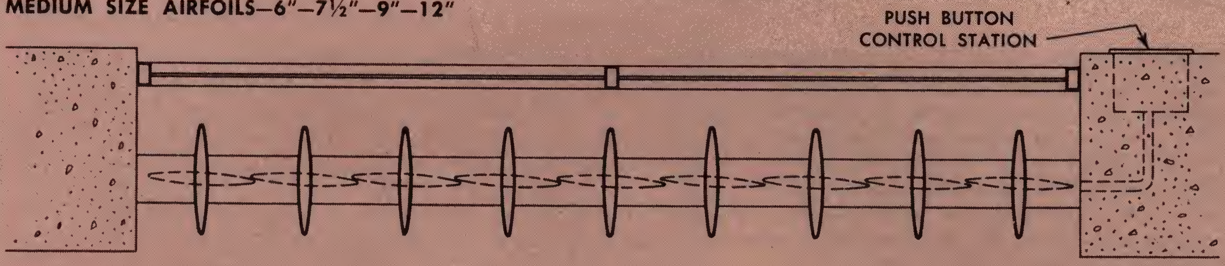
Furnish and install as indicated on the drawings, C-S Operating Vertical Sunshades as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California).

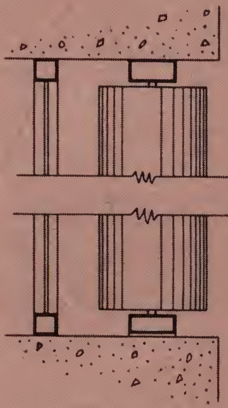
All blades shall be Aluminum Airfoil Shapes, 22 inch by 3 inch, minimum .081 gauge (see table for other sizes and gauges). There shall be no exposed fastenings or joints on the airfoil blades. All facings shall have a #10 fluted pattern. The top and bottom of each panel shall have a neat structural aluminum closure. All airfoil pivots and drive bars shall be equipped with self-lubricating nylon bearings. All pivots, fastenings, and anchorage devices shall be aluminum or stainless steel. For complete finish specifications refer to page 19.

The installation shall be so engineered and erected as to preclude rattling and vibration in the completed installation. Airfoil blades and anchorages shall be certified structurally to meet maximum wind loadings.

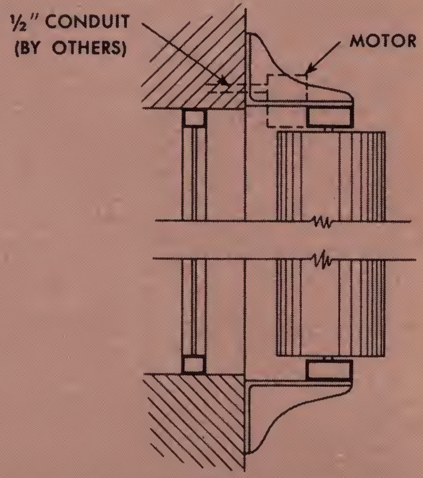
Furnish and install an automatic solar control system as manufactured by Construction Specialties Inc. System shall have a Master electronic control unit, power units and panel actuators to position panels to provide effective shading of glass areas during the hours of direct sun exposure and to automatically position panels into "full open" during periods of shade or at night. Provision shall be made for manual pushbutton control independent of the automatic control. For long form specifications on controls and monumental installations contact home office.

## MEDIUM SIZE AIRFOILS—6"—7½"—9"—12"

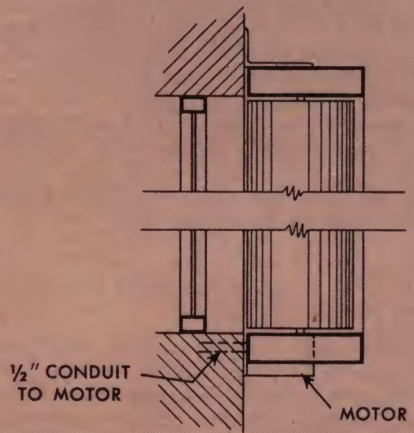




RECESSED MOUNTED

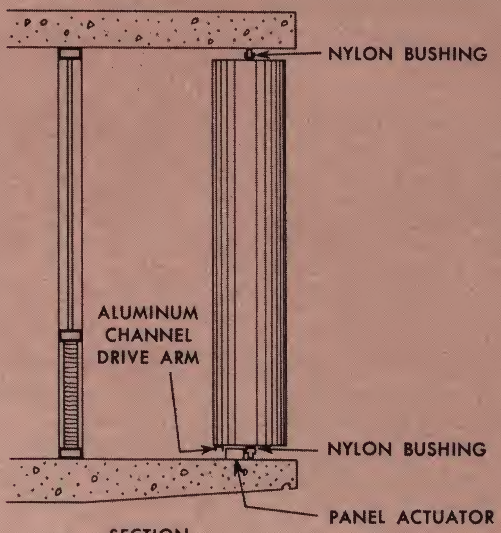


CAST BRACKET PROJECTION MOUNTED

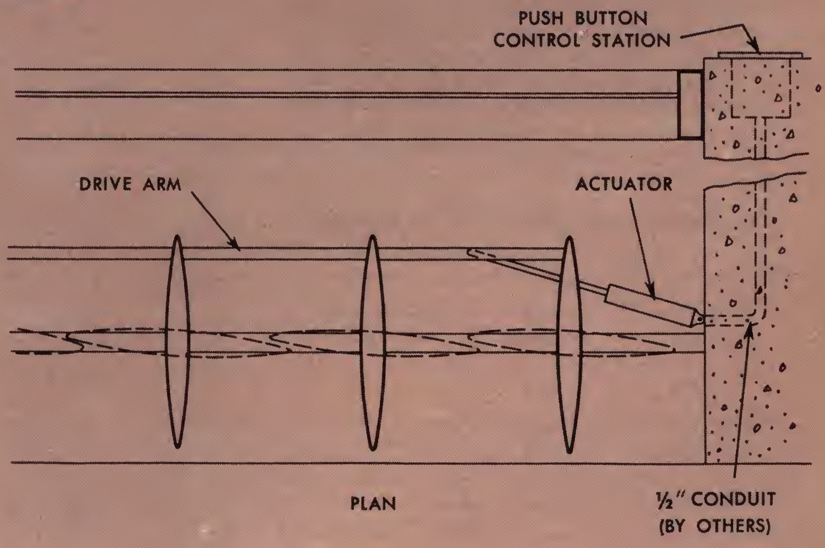


BOX FRAME SURROUND PROJECTION MOUNTED

## LARGE MODULE AIRFOILS—12"—15½"—18"—22"—28"



SECTION



PLAN

## ornamental demi-fins

C-S Ornamental Demi-Fins have been developed as a solution to the architect's recurring problem of economically adding line and form to today's functional construction. They may be used either vertically or horizontally to add dramatic line, or to delineate a module. The exposed surfaces of these fins have a #10 fluted pattern to accentuate the graceful line of the shape. The demi-fins economically add trim and visually enclose open-air structures such as parking garages, balcony areas, pavillions or walk-ways. They also have application in modernization of older buildings.

The extruded hollow section used in the C-S Demi-Fins has excellent structural characteristics. The sections are engineered to span large openings. Construction features of the demi-fin include a concealed anchorage system and the availability of long spans. Neat end closures may be supplied if desired.

A wide variety of finishes are available for C-S Demi-Fins as shown on opposite page.

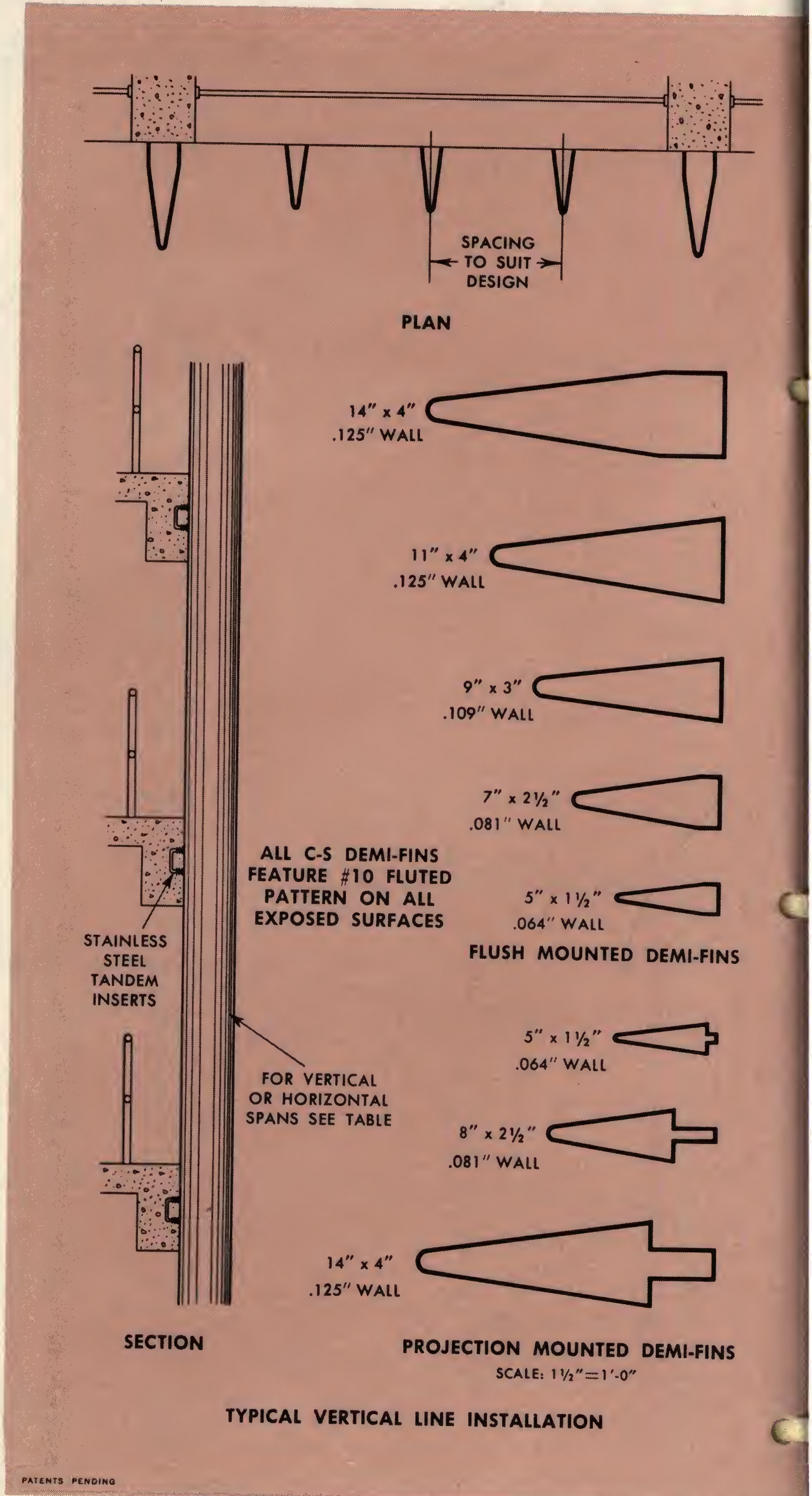
### suggested specifications

Furnish and install C-S Ornamental Demi-Fins, (indicate size and style from detail this page,) as manufactured by Construction Specialties, Inc., Cranford, New Jersey (for West Coast, use Escondido, California). All sections to be 6063-T5 alloy, minimum gauge wall thickness, (see detail this page). All exposed surfaces to have #10 fluted pattern surface with 204 R1 anodize finish .0004 thickness, protected by two coats of CS 64 butyrate lacquer. Certification of anodic treatment shall be supplied to the architect. All anchorages shall be a concealed type of stainless steel or aluminum. Joints shall be not less than 22 feet on centers. Internal line-up shall be required at all joints with adequate provision for expansion and contraction. Ends of all demi-fins shall have neat aluminum closures. Insulation shall be provided between dissimilar metals or concrete. Complete shop drawings to be submitted to architect for approval prior to fabrication.

For alternate finish specifications, see next page.

### sizes available

| blade size, inches | wall thickness | unsupported span, feet* |
|---|---|---|
| 5 x 1½ | .064 | 8 |
| 7 x 2½ | .081 | 10 |
| 8 x 2½ | .081 | 13 |
| 9 x 3 | .109 | 16 |
| 11 x 4 | .125 | 18 |
| 14 x 4 | .125 | 20 |



## finishes

The architect should clearly include a finish specification wherever C-S aluminum products are indicated. As a minimum specification, we recommend: "All aluminum to be free of scratches and blemishes, and to be given a six minute caustic etch with one coat of CS-64 butyrate lacquer."

This finish, furnished by us at no extra cost, protects the neatness of our products during installation and for years thereafter. Construction Specialties maintains complete in-plant production finishing facilities for etching, anodizing, lacquering, epoxy-base color coating, baked enamel painting, and mechanical polishing. Our direct control of our finishing facilities, at point of manufacture, assures high quality with production-run economy. Samples and cost comparisons on our finishes are available to the architect on request.

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### mill finish

The natural finish of aluminum as received from the extrusion press has an attractive, pleasing grain. Subsequent weathering grays the metal uniformly. The as-fabricated extrusion provides a low-cost finish because it requires no special treatment. However, unprotected mill finish will show fingerprints and is susceptible to damage by mortar. Hence, we recommend our minimum specification of caustic etch and butyrate lacquer.

### caustic etch and butyrate lacquer

Caustic etch and butyrate lacquer provides a satin finish which combines economy and a long life clear protective coating. The etch is produced by a low cost chemical treatment, well suited to C-S extruded aluminum products. Various degrees of etch are available. The etch not only provides a clear even texture to the aluminum, but is a pre-requisite to a proper lacquer bond.

CS-64 Butyrate Lacquer is the finest exterior protective lacquer now available. Research laboratory tests reveal it to be considerably superior to a methacrylate lacquer. It has shown itself to withstand the most rugged on-the-job testing, with no visible deterioration for periods of over four years. Detailed specifications, weatherometer test data and test comparisons with methacrylate lacquer are available for review.

Mechanical satin finish can be used prior to the etch and lacquer treatment where a special texture is desired.

### anodize finishes

Construction Specialties has complete modern facilities to anodize individual structural pieces up to 25 feet in length. This electrolytic treatment provides a smooth hard oxide coating that protects surface appearance, retaining the natural color and surface texture of aluminum. Anodized surfaces also offer increased resistance to wear, abrasion and weather and are easy to maintain. We recommend a one-hour anodize to give a .0008" coating, having a per square inch weight of 35 mg. All of our anodized work receives two coats of CS-64 butyrate lacquer. It is recommended that anodize treatments be applied to textured pro-treatments as previously discussed. It may be specified numerically as follows:

| | |
|---|---|
| Caustic Etch and Alumilite | #215 R1 |
| Mechanical Satin Finish and Alumilite | #215 C1 |

C-S maintains a quality control and certifies each job in writing as to surface film, thickness, density, range and color.

Since anodize coatings are difficult for the architect to check in the field, a written certification on the finish should be required wherever anodize is specified.

### suggested specifications

All aluminum shall have a one-hour anodize 215 R1, with two coats of CS-64 butyrate lacquer. Anodic film thickness to be .0008 inches. A certification as to film thickness, density range, and color analysis shall be supplied. Field tests of all anodize to be made at architect's request.

### epoxy base color coatings

Epoxy base coatings are a new finish process which offers the architect permanent colors on aluminum with remarkable economy. Epoxy base resin coatings were developed in answer to an architectural demand for an inexpensive color coating with the economy of baked enamel and the long life of porcelain enamel.

The color range is very broad and colors can be supplied opaque, transparent, matte, or high gloss. We recommend that you contact our home office for test data and color samples.

### suggested specifications

All Sunshades (or other C-S products) shall have a factory applied prime and finish coat in colors selected by the architect. All aluminum shall receive a chemical pre-treatment before priming. Primer shall be of the epoxy resin type, baked on for fifteen minutes at 300° Fahrenheit. After priming an epoxy resin finish coat shall be applied and baked on for 25 minutes at 350° Fahrenheit.

### porcelain enamel colors

An almost unlimited selection of colors are available in matte or gloss finishes in vitrious porcelain enamel on aluminum. They are economically practical, as well as highly decorative. Porcelain enamel colors on aluminum resist fading and withstand abuse without chipping or spalling. Wherever porcelain enamel is specified on C-S products, a detailed specification covering basic alloys, pre-treatment, enamelling, gloss, color and spall testing should be incorporated into the specifications. Full length specifications covering porcelain enamel on aluminum and porcelain samples are available on the architect's inquiry.

## SALES AND ENGINEERING REPRESENTATIVES

**For detailed information and samples of our products, telephone your nearest representative or contact our home office.**

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Birmingham
ALpine 1-1201
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Honolulu
5-4554

**PUERTO RICO**
San Juan
3-2702

For many years, Construction Specialties, Inc., has been a recognized leader in the design, fabrication and finishing of a variety of extruded aluminum products, including extruded aluminum sun shades, extruded aluminum penthouses, and extruded aluminum louvers.

Our experience has given us a wealth of specialized knowledge that is available to you without obligation.

Wherever extruded assemblies are being considered, we will be pleased to offer your our assistance in solving any problems that may arise in engineering, construction, design or use of any one of our several extruded aluminum products.

### SEE OTHER C-S CATALOGS

**▲ C-S EXTRUDED ALUMINUM LOUVERS**

| Sweet's Architectural File | Sweet's Industrial Construction File |
|---|---|
| 20d<br>Con | 14c<br>Con |

**▲ C-S CAST ALUMINUM BRICK SIZE VENTS**

| Sweet's Architectural File | Sweet's Industrial Construction File |
|---|---|
| 20d<br>Co | 14c<br>Co |

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**CONSTRUCTION SPECIALTIES, INC.**

55 Winans Avenue
Cranford, New Jersey
phone: BRidge 2-5200

West Grant Street
Escondido, California
phone: SHerwood 5-8000

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